2012 Model Based Enterprise Summit
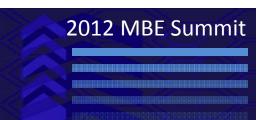## The Digital Future Today

Exchange vs. Visualization vs. Communication

Enabling the Model Based Enterprise

Claim #1

- There are three (3) principal MBE activities related to the use of MBD data:
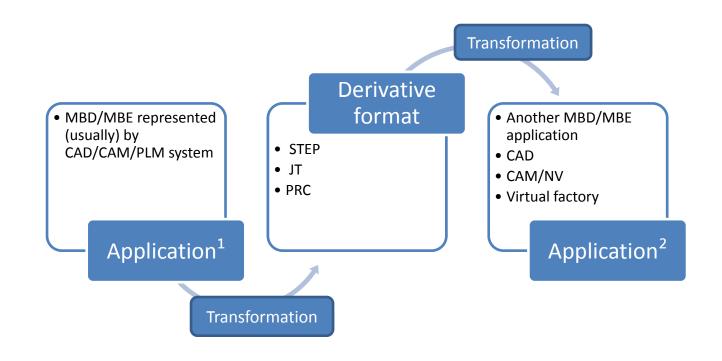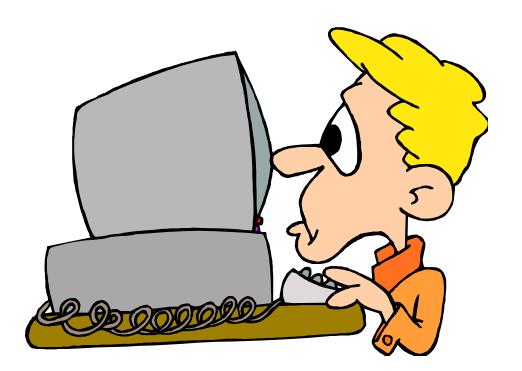
  1. Exchange
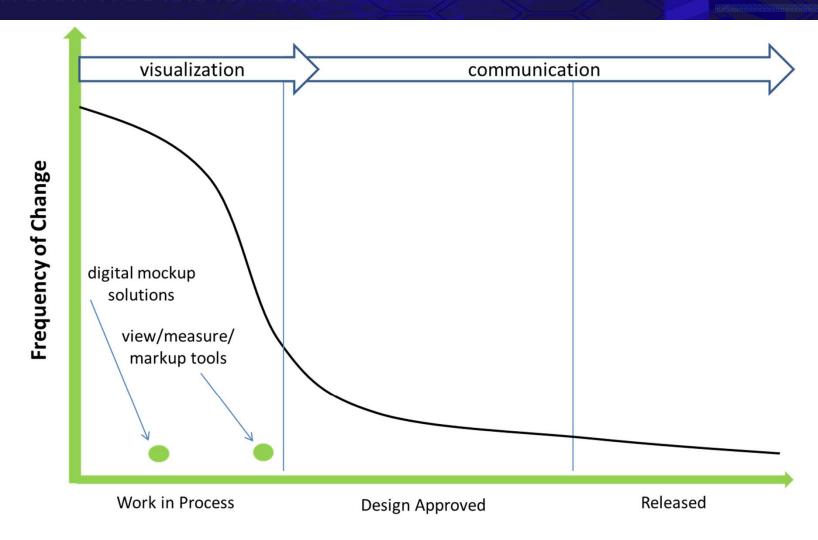 2. Visualization
  3. Communication

Data Exchange

MBD authoring application

- design authority
- CAD and PLM data
- Archivable

STEP data

- Multiple AP's possible
- XML data
- Archivable

MBD receiving application

- Modeling, NC, etc.
- Derivative representation
- CAD and PLM data
- Maybe archivable

Data Exchange Process

Transformation

Derivative format

• MBD/MBE represented (usually) by CAD/CAM/PLM system

• STEP
• JT
• PRC

• Another MBD/MBE application
• CAD
• CAM/NV
• Virtual factory

Application[1]

Application[2]

Transformation

Claim #2

- Visualization is not the same as communication.

The Role of Visualization
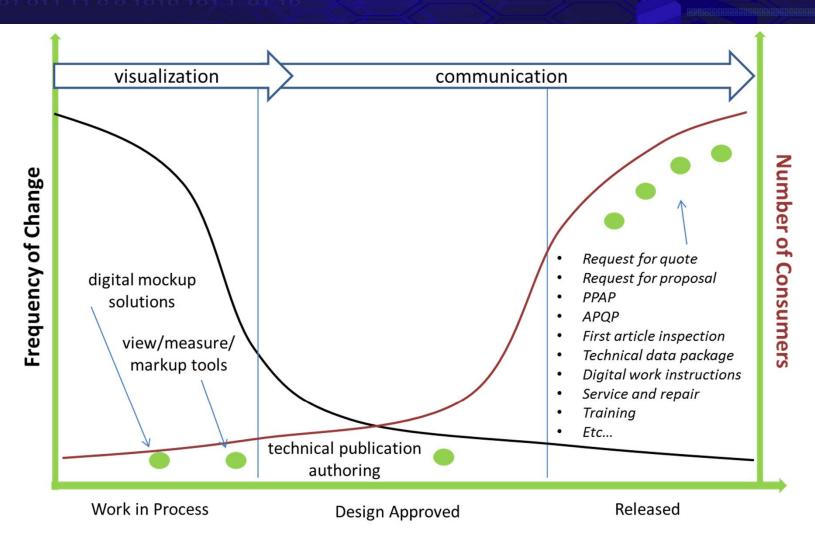
Lifecycle Functions Require More

- *Request for quote*
- *Request for proposal*
- *PPAP*
- *APQP*
- *First article inspection*
- *Technical data package*
- *Digital work instructions*
- *Service and repair*
- *Training*
- *Etc...*

digital mockup solutions

view/measure/markup tools

technical publication authoring

visualization

communication

Frequency of Change

Number of Consumers

Work in Process

Design Approved

Released
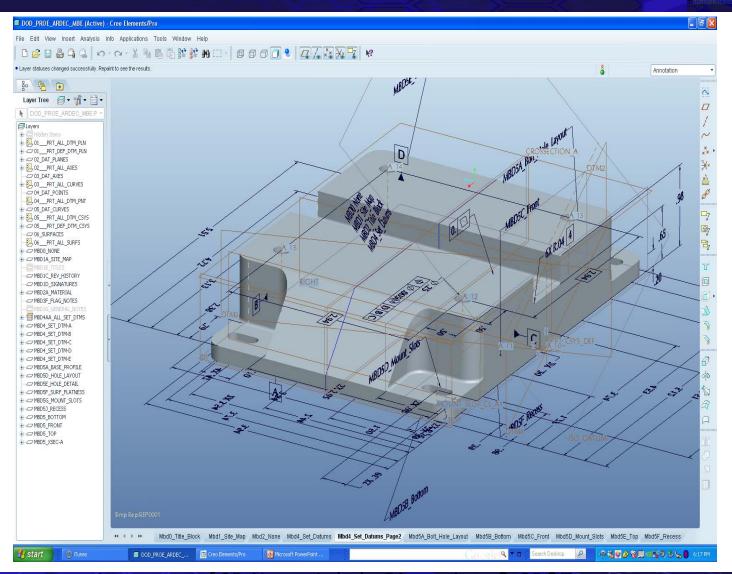
Time
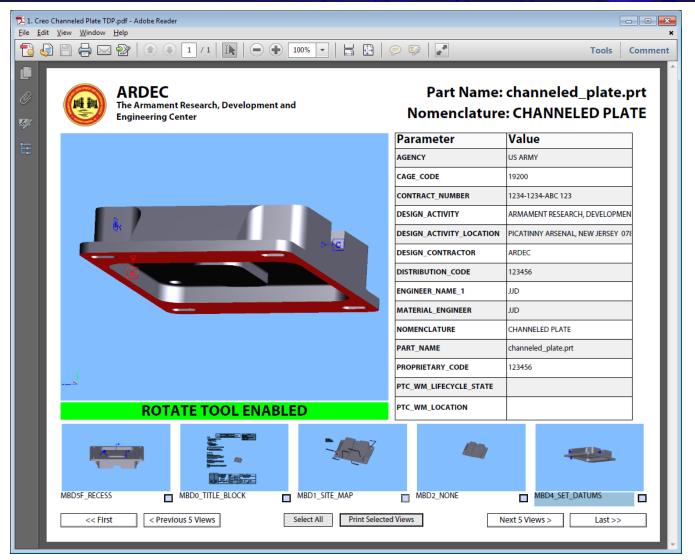
This is Visualization

A rats nest of 3D Notes, Labels, Dimensions & GD&T
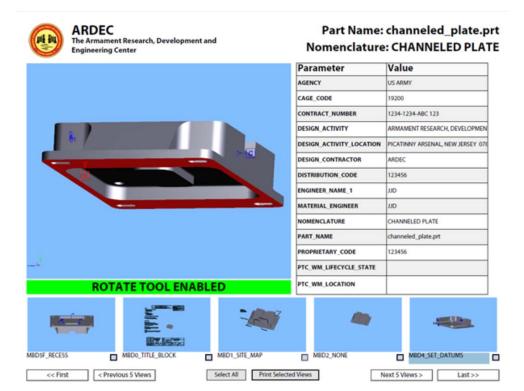
This is Communication

Engineering TDPs & RFQs

3D MBE TDP
(no 2D Drawings)

3D MBE RFQs / RFI
(in assembly context)

Manufacturing Processes

**3D MBE
Shop Floor Assembly**
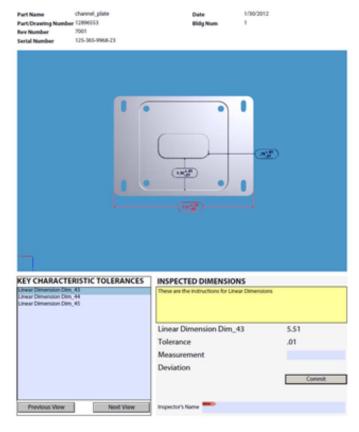
**3D MBE
Welding Best Practices**

Inspection and Field Service
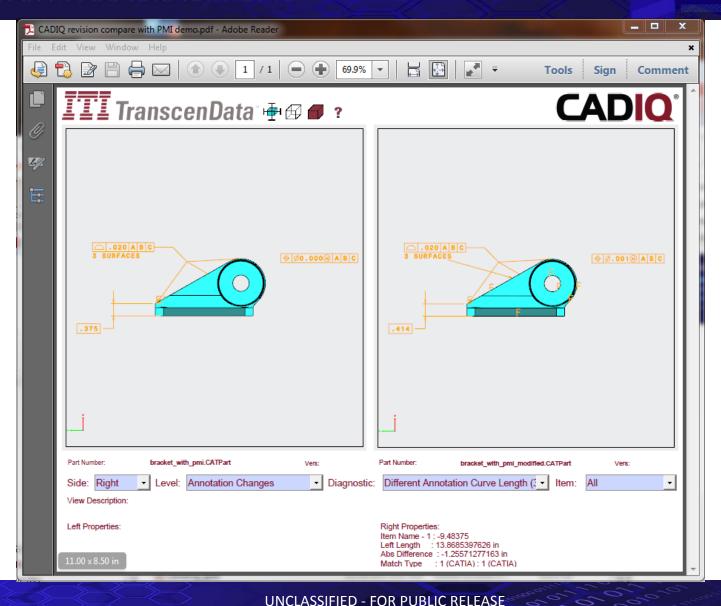
3D MBE
First Article Inspection

Field Repair
Instructions

Validation Matters

Claim #3 - PRC is the MBE Enabler

MBD² data
- derivative representation
- CAD and PLM data
- Not Archivable

MBD data
- design authority
- CAD and PLM data
- Archivable

STEP & PRC data
- Geometry
- Product structure
- Product manufacturing information

3D PDF
- derivative representation
- Any data type
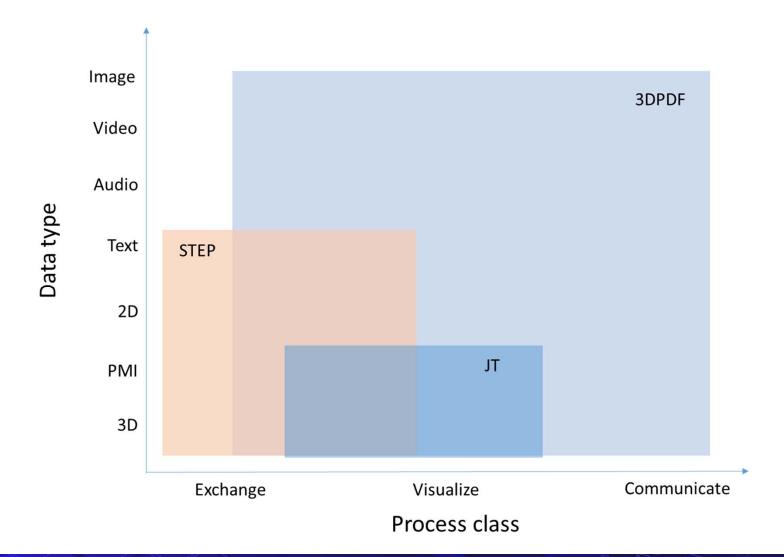- Universal access
- Archivable

Visualization App
- DMU/VMM use cases
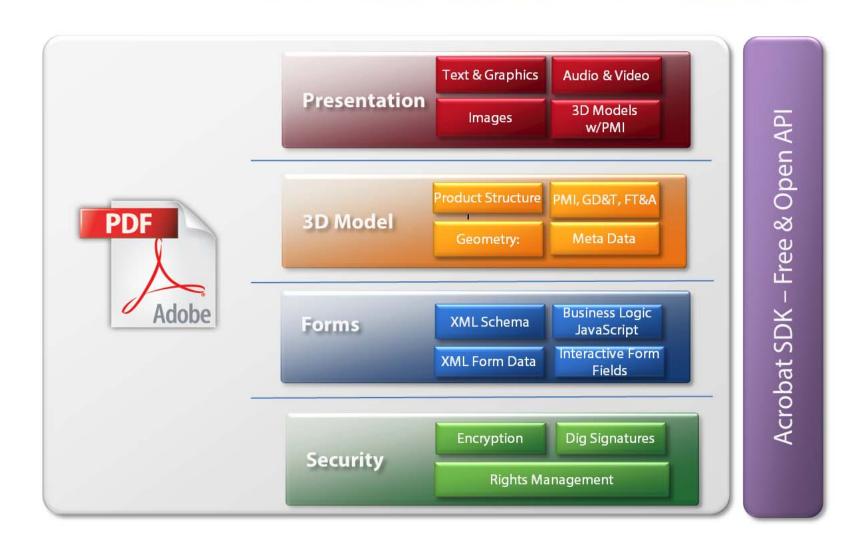
Format Domains

Future of Documents

- Yes, web sites can present composite data

- But…
  - Is bandwidth ubiquitous?
  - Who manages a 10,000 person portal?
  - Which browser?
  - How do you LOTAR web content?
  - What do you give the regulators/compliance authority?

ISO32000 is PDF...

3D PDF Content Standards Status

- ## U3D
  - U3D developed by 3D Industry Forum (3dif.org)
  - U3D currently an ECMA standard (363) under TC43
  - U3D Edition 1 is specified by PDF/E (ISO 24517-1)

- ## PRC
  - Specification published by Adobe in 2008 (PDF 1.7)
  - Released to ISO TC 171 for standardization in 2008
  - Currently managed by ISO DIS 14739 under TC 171 SC 2
  - Establishes 3D standard to be referenced by PDF (ISO 32000) and others

Why 3D PDF Matters

1. Access
   – through Acrobat Reader
2. Multi-type
   – 3D, 2D, image, text, audio, video, enterprise data
3. Infrastructure
   – existing systems already support PDF
4. Neutrality
   – Investment protection
5. Value
   – Low investment threshold with high payback

What is the 3D PDF Consortium?

- A *community* dedicated to driving adoption of 3D PDF enabled solutions through:
  - Defining industry needs and priorities
  - Creating reference implementations and other resources
  - Providing input to the standards process
  - Raising awareness
- A worldwide, non-profit, member organization
- Open to all companies

Organization Details

- Law firm – Gesmer, Updegrove LLP
- Incorporated in Delaware, U.S. January 3, 2012
- Form of organization – 501(c)6 Trade Organization under IRS Tax code
- Filed with National Cooperative Research and Production Act (NCRPA) for anti-trust protection
- Bylaws, Articles of Incorporation, and incorporation certificate available
- Introduced in Japan (Feb) and Germany (June)
- All back office functions outsourced
- Managed by an Executive Director

What is the Consortium structure?

Board of Directors
- governance, recruiting

Executive Committee
- mission, vision, strategic direction

Industry Committee
- Define industry needs and priorities
- Develop process-based use cases
- Assign priorities to technical committee work

Technical Committee
- Project goals and objectives
- Project plans, participation, funding
- Implementers forum
- ISO technical submissions

Communications Committee
- Web site
- Publications
- Solicit and propose case studies
- Presentations
- Blog/article submissions

Why is the Consortium important?

- Define priorities according to member needs
- Speak for the industry with a unified voice
- Source of subject matter expertise
- Illustrate market demand and availability
- Provide technical input to standards process
- Offer vendor-neutral advice to end user _and_ ISV members on implementation strategies
- Resources such as reference implementations, implementer forum, white papers, templates, Javascript, libraries